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EXAMINER	
WILLS, LAWRENCE E	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/798,094	CONDON ET AL.	
	Examiner	Art Unit	
	LAWRENCE E. WILLS	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 May 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed May 22, 2008 have been fully considered but they are not persuasive. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., Fig. 4B of Scott are not distributing error to pixels in the scaled image through an error diffusion algorithm) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

2. Furthermore: claims 1 states scaling the halftoned image by performing pel repetition utilizing an error diffusion algorithm. Clearly, the error diffusion is referring to scaling.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 5, 6, 7, 8, 11, 12, 13, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Scott et al. (US Patent No 5,097,518).

Regarding claim 1, Scott'518 teaches a method for providing a halftoned image comprising the step of: scaling the halftoned image by performing pel repetition utilizing an error

diffusion algorithm such that artifacts are minimized (Fig. 4B "Error diffusion pixel replication enlargement scaling, in addition column 19, lines 46-52).

Regarding claim 2, Scott'518 teaches wherein n.times.m pel blocks of an image are scaled to n+1.times.m pel blocks (the groupsizes for enlargement relate to the pixel blocks in the destination image, column 19, lines 59-65, for instance, the X groupsize generator would insert a single block into a group of pixels and it would be determined then the destination image is complete, Step 610, Fig. 6) by inserting single pels in each block at locations distributed through the block (filling a block by replicating a single pixel value, column 47, lines 65-66) according to the error-diffusion algorithm (error diffusion pixel replication enlargement scaling, column 48, lines 55-61), with values chosen such that the average intensity of the block is substantially unchanged (each contone pixel value can be appropriately thresholded to yield a corresponding bi-tonal pixel value which is subsequently processed by this inventive method. Alternatively, the contone values that occur within a block of pixels in a source image can be combined, such as by taking the maximum or average value of all these contone values to yield a corresponding single contone value for use in the reduced image, column 48, lines 47-55, similar methods would be used for enlargement as well).

Regarding claim 5, Scott'518 teaches wherein a threshold matrix (each contone pixel value can be appropriately thresholded, column 48, lines 47-55) is utilized to maintain the average intensity of a block (average value of all these contone values to yield a corresponding single contone value for use in the reduced image, column 48, lines 47-55).

Regarding claim 6, Scott'518 teaches a printing system for providing a halftoned image comprising: a storage device (film library, column 9, line 2)for providing a continuous tone (contone) image (mircofilm, column 9, line 5); a spooler (scanner node, number 14, Fig. 1, in addition, column 9, lines 1-10) for receiving the contone image (scanner node controls the film library to fetch and load a specified roll of microfilm, column 9, lines 4-5) and converting the image to a halftoned image (electronically scans and digitizes a gray scale microfilm image into a bit mapped bi-tonal image, column 9, lines 7-10); a scaler (number 335, Fig. 3, in addition column 12, lines 16-17) for scaling the halftoned image by performing pel repetition utilizing a error diffusion algorithm such that artifacts are minimized (Fig. 4B "Error diffusion pixel replication enlargement scaling, in addition column 19, lines 46-52); and a printer for receiving the halftoned image and printing the image (output pixel data from framestore to the particular output device, column 12, lines 23-24, the framestore contains the scaler and output device is laser printer, see Fig. 2, Printer Sub-System, numbers 240, 245, and 250).

Regarding claim 7, Scott'518 teaches 7 wherein the scaler is within the printer (see Fig. 2, Printer Sub-System, numbers 240, 245, and 250).

Regarding claim 8, Scott'518 teaches wherein n.times.m pel blocks of an image are scaled to n+1.times.m pel blocks by inserting single pels in each block at locations distributed through the block according to the error-diffusion algorithm, with values chosen such that the

average intensity of the block is substantially unchanged (as discussed in claim 2 above, column 48, lines 47-55).

Regarding claim 11, Scott'518 teaches wherein a threshold matrix is utilized to maintain the average intensity of a block (as discussed in claim 2 and 5 above, column 48, lines 47-55).

Regarding claim 12, Scott'518 computer readable medium containing program instructions (control program, column 10, line 28) for providing a halftoned image, the program instructions for: scaling the halftoned image by performing pel repetition utilizing an error diffusion algorithm such that artifacts are minimized (Fig. 4B "Error diffusion pixel replication enlargement scaling, in addition column 19, lines 46-52).

Regarding claim 13, Scott'518 teaches wherein n.times.m pel blocks of an image are scaled to n+1.times.m pel blocks by inserting single pels in each block at locations distributed through the block according to the error-diffusion algorithm, with values chosen such that the average intensity of the block is substantially unchanged (as discussed in claim 2 above, column 48, lines 47-55).

Regarding claim 16, Scott'518 teaches wherein a threshold matrix is utilized to maintain the average intensity of a block (as discussed in claim 2 and 5 above, column 48, lines 47-55).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3, 4, 9, 10, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scott et al. (US Patent No. 5,097, 518) as applied to claims 1, 6, and 12 above, and further in view of Li et al. (US Patent No. 6,563,957).

Regarding claim 3, Scott'518 fails to teach wherein no pel from a n.times.m pel block is shifted more than one position from its neighboring pels in the scaled (n+1.times.m) block.

Li'957 teaches wherein no pel from a n.times.m pel block is shifted more than one position from its neighboring pels in the scaled (n+1.times.m) block (For each pixel of the halftone image, the impact of toggling the pixel or swapping its value with one of its eight nearest neighbors is evaluated. If any change reduces the error, the change which gives the greatest decrease in the error is accepted, column 10, lines 13-20).

Having a system of Scott'518 reference and then given the well-established teaching of Li'957 reference, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the error diffusion method to scale halftone images taught by the Scott'518 reference to include the error metric as taught by Li'957 reference, since the error metric preserves the local tone of the image (column 2, line 42), thus increasing the quality of the output image.

Regarding claim 4, Scott'518 fails to teach wherein the n.times.m pel block is shifted by a shifting matrix.

Li'957 teaches wherein the n.times.m pel block is shifted by a shifting matrix (error metric, column 10, line 4).

Having a system of Scott'518 reference and then given the well-established teaching of Li'957 reference, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the error diffusion method to scale halftone images taught by the Scott'518 reference to include the error metric as taught by Li'957 reference, since the error metric preserves the local tone of the image (column 2, line 42), thus increasing the quality of the output image.

Regarding claim 9, Scott'518 fails to teach wherein no pel from a n.times.m pel block is shifted more than one position from its neighboring pels in the scaled (n+1.times.m) block.

Li'957 teaches wherein no pel from a n.times.m pel block is shifted more than one position from its neighboring pels in the scaled (n+1.times.m) block (For each pixel of the halftone image, the impact of toggling the pixel or swapping its value with one of its eight nearest neighbors is evaluated. If any change reduces the error, the change which gives the greatest decrease in the error is accepted, column 10, lines 13-20).

Having a system of Scott'518 reference and then given the well-established teaching of Li'957 reference, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the error diffusion method to scale halftone images taught by

the Scott'518 reference to include the error metric as taught by Li'957 reference, since the error metric preserves the local tone of the image (column 2, line 42), thus increasing the quality of the output image.

Regarding claim 10, Scott'518 fails to teach wherein the n.times.m pel block is shifted by a shifting matrix.

Li'957 teaches wherein the n.times.m pel block is shifted by a shifting matrix (error metric, column 10, line 4).

Having a system of Scott'518 reference and then given the well-established teaching of Li'957 reference, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the error diffusion method to scale halftone images taught by the Scott'518 reference to include the error metric as taught by Li'957 reference, since the error metric preserves the local tone of the image (column 2, line 42), thus increasing the quality of the output image.

Regarding claim 14, Scott'518 fails to teach wherein no pel from a n.times.m pel block is shifted more than one position from its neighboring pels in the scaled (n+1.times.m) block.

Li'957 teaches wherein no pel from a n.times.m pel block is shifted more than one position from its neighboring pels in the scaled (n+1.times.m) block (For each pixel of the halftone image, the impact of toggling the pixel or swapping its value with one of its eight nearest neighbors is evaluated. If any change reduces the error, the change which gives the greatest decrease in the error is accepted, column 10, lines 13-20).

Having a system of Scott'518 reference and then given the well-established teaching of Li'957 reference, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the error diffusion method to scale halftone images taught by the Scott'518 reference to include the error metric as taught by Li'957 reference, since the error metric preserves the local tone of the image (column 2, line 42), thus increasing the quality of the output image.

Regarding claim 15, Scott'518 fails to teach wherein the n.times.m pel block is shifted by a shifting matrix.

Li'957 teaches wherein the n.times.m pel block is shifted by a shifting matrix (error metric, column 10, line 4).

Having a system of Scott'518 reference and then given the well-established teaching of Li'957 reference, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the error diffusion method to scale halftone images taught by the Scott'518 reference to include the error metric as taught by Li'957 reference, since the error metric preserves the local tone of the image (column 2, line 42), thus increasing the quality of the output image.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAWRENCE E. WILLS whose telephone number is (571)270-3145. The examiner can normally be reached on Monday-Friday 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Poon can be reached on 571-272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/King Y. Poon/
Supervisory Patent Examiner, Art Unit 2625

LEW
September 17, 2008